

and median wing-coverts like the back, the remainder, as well as the quills, dark brown, with slightly paler edges; the primaries rufous for the greater portion of their length, this red colour concealed when the wing is shut; tail-feathers black, edged with dull violet-blue; sides of face and entire under surface of body glossy violet-blue, a little duller than the upper surface; under wing-coverts like the breast; quills dusky brown below, the inner webs broadly rufous for a great portion of their extent. Total length 7.5 inches, culmen 0.6, wing 3.5, tail 3.3, tarsus 0.75. (*Mus. Berol.*)

*Hab.* Congo district.

6. On a Collection of Marine Shells from the Andaman Islands. By EDGAR A. SMITH, F.Z.S., Zoological Department, British Museum.

[Received August 16, 1878.]

(Plate L.)

The shells treated upon in this paper form part of a series recently presented to the British Museum by Capt. L. Worthington Wilmer, by whom they were dredged whilst stationed at the Andaman Islands. All, with one or two exceptions, were obtained at the depth of a few fathoms off Port Blair. The collection contains about half a dozen new forms, the most interesting of which is a remarkable shell which I have provisionally located in the genus *Fusus*. After each species I have quoted the locality first assigned to it, and others have been added on the authority of specimens in the Museum, in order to give at a glance the known geographical distribution, which is always interesting, and calculated to assist materially in the identification of the various forms.

1. *CONUS ANDAMANENSIS*. (Plate L. figs. 1, 1 a.)

Shell subcylindrical, with somewhat convex lateral outlines, pale pinkish white, marked irregularly with small brown spots and lines, and covered with a very thin, smooth, greyish epidermis: spire elevated concave, composed of ten whorls; the two nuclear ones subglobose, semidiaphanous, smooth, the four following slightly turreted, and the rest obliquely planulated, spirally sculptured with two to three fine revolving striæ; the markings on the spire are in the form of short brown lines following a radiating direction (that is, across the whorls): the last whorl has the upper angle rather obtuse, and is sulcated at the base with about twelve transverse grooves. Aperture rather narrowed above, and a little widened towards the base, white within. Lip thin, with a small situation at the upper extremity. Length 22 mill., diam. 11.

This pretty little species, which I am unable to place as the young state of any larger form, is remarkable on account of the fine brown dots or lines, which are irregularly scattered over its surface of a





delicate pale pink. The spire too is peculiar, on account of the few first whorls being suddenly elevated into a little prominent cone.

Since writing the above description I have seen a larger specimen from the collection of Dr. Hungerford. It measures 31 millims. in length and 15 in diameter; and the markings are rather larger, certain spots a little above the middle of the last whorl taking the form of a transverse interrupted band (fig. 1 *a*).

2. *CONUS CEYLANENSIS*, Hwass.

*Hab.* Red Sea, Ceylon, Rodriguez Island; varieties at Sandwich Islands, Lord Hood's Island, &c.

3. *PLEUROTOMA (DRILLIA) VARIABILIS*, Smith, *Annals & Mag. Nat. Hist.* 1877, vol. xix. p. 495. (Plate L. figs. 2 & 3.)

There is a non-adult variety of this species, which does not exhibit at this stage of growth any indication of the slight umbilical rimation which is characteristic of the mature shell. It is whitish dotted with brown beneath the suture, and stained with a darker tint above it in the spaces between the short costæ; and the spiral liræ are also dotted with brown. The body-whorl is encircled around the middle by a broad brownish band, which is darker at the edges, and below this it is entirely white.

4. *PLEUROTOMA (DRILLIA) WILMERI*. (Plate L. fig. 4.)

Shell subfusiform, not rimate, white, dotted with brown beneath the sutural line, and with a series of brown dots or (in other words) an interrupted line around the middle, the dots being situated just above the interspaces between the nodules, which form a series a little below the middle of the whorls. The lower half of the body-whorl dark brown; and a spot of the same colour stains the shell at the superior sinus; the apex is also brown. Whorls ten, broadly concave above, and somewhat acutely noded below; nodules eleven in number on the penultimate whorl, the last volution transversely striated, the basal striæ being stronger than elsewhere; aperture rather small, white, stained with dark brown at the short basal canal; labrum thin, arcuate when viewed laterally, deeply and broadly sinuated at the suture, with a second small sinus or indentation near the base; columella but little curved or sinuous, covered with a thin brown callosity, terminating above in a large white tubercle. Length 16 mill., diam. 6.

This shell is very distinguishable from its congeners, on account of the peculiarity of its painting, and the series of sharpish tubercles encircling the whorls. I have much pleasure in naming it after Capt. Wilmer, its discoverer.

5. *TEREBRA AFFINIS*, Gray.

*Hab.* Philippines, Fiji, Tahiti.

6. *TEREBRA EXIGUA*, Deshayes.

*Hab.* East Australia.

It is interesting to obtain authentic examples of this species from

the Andaman Islands, as the type shells were described as East-Australian. The specimen before me, which is apparently adult, has a length of 21 millims., and the last whorl is 4 in diameter. The costæ (about 18 on a whorl) are thickest at the upper extremity, above the sulcus which parts off the infrasutural belt, gradually attenuating downwards, and at length become quite obsolete at the extreme base of the body-whorl.

7. MUREX (MURICIDEA) CIRROSUS, Hinds.

*Hab.* Straits of Macassar (*Hinds*).

Some small specimens of this charming shell were dredged by Capt. Wilmer, one of which possesses an unusually long canal.

8. MUREX (MURICIDEA) RUSTICUS, Reeve. (Plate L. fig. 5.)

*Hab.* —?

I feel uncertain whether the Andamanese shell is without doubt the same species as that figured by Reeve. It agrees very well with the description, but exhibits some difference from the figure, which is very coarsely executed. The number of transverse ridges is greater, the mouth a little smaller; and the fronds, although a little broken and worn, would not I think, if perfect, be as long as those represented in the figure.

9. MUREX (MURICIDEA) BARCLAYANA, H. Adams.

*Coralliophila barclayana*, H. Ad. P. Z. S. 1873, p. 205, pl. 23. fig. 1.

*Hab.* Mauritius (*H. Ad.*).

The Andamanese specimen of this species, the type of which is now in the British Museum, is only 21 millims. in length, yet apparently full-grown. Its coloration is much less brilliant than the representation of the described shell, being pale pinkish white, with the lateral varix and the termination of the canal tinged with brown, the aperture being light purple.

10. MUREX (OCINEBRA) BREVICULUS, Sowerby, Proc. Zool. Soc. 1840, p. 146; Conchol. Illustr. fig. 37.

*M. tetragonus*, Reeve (non Broderip), Conch. Icon. iii. fig. 118.

*Hab.* —?

A single, much worn, yet undoubted example of this species is valuable as indicating the habitat of so interesting a form. Reeve considers it a short variety of Broderip's *M. tetragonus*, the figure he gives of the latter representing a typical *breviculus*. *M. tetragonus* proper is well figured by Sowerby in his 'Conchological Illustrations,' fig. 25. Judging from the specimens of the two species which I have examined, all of them unfortunately in a more or less worn and faded condition, I am of opinion that they are specifically distinct. Besides the much stouter and less-produced form of *M. breviculus*, its aperture is larger and more circular, white or slightly blotched with brown far within; the transverse costæ, especially on the obtuse varices, are also brown. *M. tetragonus*, on the other

hand, is white, or very pale purple, and the aperture, the interior of the basal channel, and the columella, are of a uniform light purple. It is true, however, that the sculpture in both is remarkably similar.

11. *COLUMBELLA* (*ANACHIS*) *NIGRICOSTATA*. (Plate L. fig. 6.)

Shell acuminate ovate, subturreted; beneath a thin dirty yellowish epidermis, white, with black ribs, with a series of white spots on the costæ a little above the middle of the last whorl, and with a black elongate spot or line in each of the interstices between the ribs, those towards the labrum being produced downwards to the base in a rather zigzag manner. Whorls 8, a little convex, with about 12 thinnish ribs on each. Body-whorl a little flattened or even concave at its broadest part; the ribs in front are produced somewhat below the middle; and on the back four or five nearest the lip are developed only a short distance from the suture, leaving the whorl below them smooth. At the base it is transversely grooved, the eight or nine ridges or liræ between the sulci being spotted with black. These spots are the continuation of the colouring of the longitudinal costæ. Aperture small, narrow, bluish white within; labrum exteriorly thickened, thin at the edge and bearing about 8 tubercles within, of which the three or four upper ones are the largest; columella sub-erect, slightly convex at the middle, covered with a thin callosity, with a free margin, through which the transverse ridges which wind round the end or cauda of the whorl appear somewhat in the form of nodules. Length  $12\frac{1}{2}$  mill., diam. 6.

This species is well characterized by its coloration, the black costæ contrasting conspicuously with the pale interstices. It is considerably like *C. terpsichore*, Sowerby, in form and sculpture, but different in colour.

12. *COLUMBELLA* (*ATILIA*) *PUELLA*, Sowerby; Reeve, Conch. Icon. xi. sp. 65.

*Hab.* Philippines.

The plicæ on the back of the body-whorl are almost obsolete; but immediately behind the labrum three are well developed and situated very close together, thus forming a very strong postlabral varix. The denticulation within the aperture consists of about eight short fine liræ. The columella is coated with a thickish enamel, and is armed with about seven fine, short, transverse lirations.

13. *ENGINA* *ASTRICTA*, Reeve.

*Ricinula astricta*, Reeve, Conch. Icon. iii. fig. 31.

*Hab.* —? (*Rve*).

14. *NASSA* *ELEGANS*, Kiener; Reeve, Conch. Icon. viii. pl. 2. fig. 10 (not good); Kiener, Coq. Viv. pl. 24. fig. 97.

*Hab.* Indian Ocean.

15. *NASSA* *CRENULATA*, Bruguière; Reeve, Conch. Icon. sp. 2; Kiener, Coq. Viv. pl. 23. fig. 90.

*Hab.* Philippines.

16. *NASSA TÆNIA*, Gmelin, Syst. Nat. p. 3493; Knorr, Vergnüg. v. pl. 10. fig. 3.

*N. olivacea*, Bruguière, Reeve, fig. 19; Kiener, pl. 15. fig. 53.

*Hab.* "West Indies" (*Lamarck and Reeve*); Ceylon and Chili (*Kiener*).

"West Indies," which is cited by some authors as the home of this species, is doubtless erroneous; for it is scarcely possible that any species of Mollusca living on the shore between tide-marks could be found inhabiting such remote localities as the Andaman Islands and the West Indies. It was collected by Cuming on mud banks in the Bay of Manilla; and the specimens obtained by Capt. Wilmer were found on the mud in mangrove-swamps.

17. *NASSA LURIDA*, Gould, Proc. Boston Soc. Nat. Hist. 1849, vol. iii. p. 153; Atlas, Wilkes's Explor. Exped. pl. 19. fig. 325 *a, c*; Otia, p. 68.

*N. dispar*, A. Adams, P. Z. S. 1851, p. 96; Reeve, Conch. Ic. fig. 45.

*Hab.* Samoa Islands (*Gould*); Philippines (*Reeve*).

18. *NASSA BIFARIA*, Baird, Cruise of the Curaçoa, p. 436, pl. 38. figs. 1, 2. (Plate L. fig. 7.)

*Hab.* New Caledonia

The type of this species was brought from New Caledonia. The Andaman specimens differ from that form in a few respects: the plicæ on the body-whorl are more numerous and more developed towards the base; and the transverse sulci on the central portion are generally more pronounced.

19. *NASSA MONILE*, Kiener, Coq. Viv. pl. 11. fig. 40; Reeve, Conch. Ic. fig. 38.

*Hab.* Philippines.

20. *NASSA MARGARITIFERA*, Dunker.

*Buccinum margaritiferum*, Dkr., Philippi's Abbild. vol. iii. pl. 1. fig. 12. (Non *Nassa margaritifera*, Dkr., Reeve, figs. 59 *a, b*.)

*N. costellifera*, A. Adams, P. Z. S. 1851, p. 113; Reeve, figs. 58 *a, b*.

*Hab.* Rocks below Ross Island; Port Blair (*Wilmer*).

The shell figured by Reeve as *margaritifera* of Dunker certainly is distinct from that species, and may possibly be a closely ribbed variety of *Nassa marginulata*, Lamarck.

21. *NASSA STIGMARIA*, A. Adams, P. Z. S. 1851, p. 96; Reeve, Conch. Icon. sp. 42.

*Hab.* "Dredged in deep water, Port Blair" (*Wilmer*). Other localities are Japan, Philippines, and New Caledonia.

The specimens from the Andaman Islands are very much smaller than that figured by Reeve, having only a length of 10 to 13 millims. In all other respects they agree very well, varying one from another

in the length of the spire, the proximity of the series of granules, and the size of them.

A peculiarity of this species consists in the manner in which some of the yellowish tubercles are as it were set in an irregular darker-coloured ring, or, in other words, are surrounded by a dark line at their base.

22. *NASSA GEMMULIFERA*, A. Adams, P. Z. S. 1851, p. 99; Reeve, Conch. Icon. viii. figs. 132 *a*, *b*.

*Hab.* Philippines (*Cuming*).

23. *NASSA ALBESCENS*, Dunker.

*Buccinum albescens*, Philippi's Abbild. neuer Conch. iii. pl. 2. fig. 15.

*Nassa albescens*, Reeve, Conch. Icon. viii. fig. 100.

*Hab.* West Indies (*Dunker and Reeve*); Sandwich Islands.

This species is undoubtedly an East- and not West-Indian species. It has been found at the Sandwich Islands by Pease, and also at other localities in the Pacific.

24. *NASSA (ARCULARIA) GLOBOSA*, Quoy and Gaimard.

*Buccinum globosum*, Q. and G. Voy. Astrolabe, pl. 32. figs. 25-27.

*Nassa globosa*, Reeve, Conch. Icon. viii. figs. 62 *a*, *b*.

*Hab.* Vanikoro Island and New Ireland (*Quoy*).

25. *NASSA MARRATII*, Smith, Journ. Linn. Soc. xii. p. 543, pl. 30. fig. 4. (Plate L. fig. 8.)

*Hab.* Solomon Islands.

This species I described from specimens collected at the Solomon Islands. The shells from the Andaman Islands are a trifle larger, having a length of 19 millims; with the exception of this difference, they agree perfectly with the typical shells. In the above-quoted figure of this species the form of the aperture is not at all correctly drawn. The columella has not such a long curve; and the labrum should be more expanded at basal end.

26. *NASSA (HIMA) SISTROIDEA*, G. and H. Nevill, Journ. Asiatic Soc. Bengal, 1874, xliii. part 2, pl. 1. fig. 6.

*Hab.* "Found in one spot below the rocks near the barracks, Ross Island, very local" (*Wilmer*).

In their description of this interesting species, Messrs. Nevill do not remark upon the curious way in which the costæ on the body-whorl are trinodose through the prominence of some of the transverse liræ at intervals. The uppermost row of nodulous projections borders the depression or elevation at the top of the whorl; the median series is situated about the middle, and the lowermost a little below that. This I take to be a specific character, as it is present in all the adult specimens which I have seen, and the above-named figure of their type also exhibits this peculiarity. The whitish band which is seen within the aperture runs between the uppermost and median series of nodules.



Besides the two or three "plaits," which perhaps should rather be termed elongate tubercles, at the base of the columella, there is a small one at the upper part, usually present in most species of *Nassa*.

*N. trinodosa* of Smith has the same nodulation on the last whorl, but, however, is quite distinct from this species. It differs in colour, has fewer longitudinal costæ, which are less granulous; and the spiral thread-like liræ which cross them are fewer and less prominent.

*N. subspinososa* of Lamarck is another allied species of much the same form, and having the same character of sculpture; only the nodules are much more prominent and the ribs less numerous.

27. *NASSA* (*ARCULARIA*) *GRANIFERA*, Kiener, Coq. Viv. pl. 27. fig. 111; Reeve, Conch. Ic. viii. fig. 72.

*Hab.* Philippines (*Reeve*).

28. *NASSA* (*ARCULARIA*) *BIMACULOSA*, A. Ad. P. Z. S. 1851, p. 102; Reeve, Conch. Icon. viii. sp. 61.

*Hab.* Philippines (*Cuming*); "Andaman Islands, on sand banks at low tide; very active animal" (*Wilmer*).

29. *NASSA* (*ARCULARIA*) *CALLOSPIRA*, A. Ad. P. Z. S. 1851, p. 102; Reeve, Conch. Icon. viii. figs. 66 *a*, *b*; G. and H. Nevill, Journ. Asiatic Soc. Bengal, 1874, vol. xliii. pt. 2, pl. figs. 5, 5 *a*.

*Hab.* Andaman Islands (*Nevill and Wilmer*); Philippines (*Cuming*).

On comparing an Andaman specimen with the type of the species, I do not hesitate for a moment with regard to its identity.

30. *NASSA* *HORRIDA* Dunker.

*Buccinum horridum*, Dkr., Philippi's Abbild. neuer Conch. iii. pl. 2. fig. 8.

*Nassa horrida*, Dkr., Reeve, Conch. Icon. viii. figs. 69 *a*, *b*.

*N. curta*, Gould, Otia, p. 69; Atlas, Wilkes's Explor. Exped. pl. 19. figs. 326 *a*, *b*.

*Hab.* Samoa Islands (*Gould*).

31. *NASSA* *ECHINATA*, A. Adams, P. Z. S. 1851, p. 101; Reeve, Conch. Icon. viii. fig. 131. (Plate L. fig. 9.)

*Hab.* Philippines.

The Andaman specimens are all shorter than the type, which is figured by Reeve; and not one of them has the fifth or lowermost series of nodules on the body-whorl, which is very closely approximated to the fourth row. In other respects they agree perfectly with the typical shells said to have been found at the Philippine Islands. This species is allied to *N. muricata* of Quoy and Gaimard, yet is perfectly distinct. It differs from that species in being almost quite smooth in the interstices between the nodules, there being only the faintest indication of spiral striæ in some specimens. The aperture, too, is less elongate, and the margin of the basal canal is stained with dark brown. This

is very characteristic, and, although not referred to by Reeve or Adams, is constant in all the specimens which I have seen.

The colour is whitish, with the oblique longitudinal costæ usually pale brown; and the tips of the rather acute nodules are white. *Nassa gruneri*, Dunker, is another closely allied form, yet readily distinguished by its colour and sculpture.

32. PHOS SENTICOSUM, Linn.

*Hab.* Philippines.

This beautiful and well-known species varies very considerably in colour, from white with dark transverse bands to uniform rich purple-brown, with some of the spiral thread-like liræ yellow.

33. PHOS ROSEATUM, Hinds.

*Hab.* Philippines, Moluccas, &c.

34. PHOS TEXTUM, Gmel.

*Buccinum blainvillei*, Deshayes.

*B. cancellatum*, Quoy & Gaimard.

*Phos cyanostoma*, Sowb. (not of A. Ad.), Thes. fig. 46.

*Hab.* Philippines.

The shell figured by Sowerby as *P. cyanostoma* of A. Adams is a slight variety of *P. textum*, differing in having a somewhat elongated spire and the body-whorl a trifle shorter than usual, and constricted just above the raised ridge which encircles the extreme base or cauda of the whorl. The painting is precisely the same in both forms. The true *cyanostoma* (described in the Proc. Zool. Soc. 1850, p. 155) is very like this variety in form and sculpture, but is distinguished by the margins of the columella and labrum and the tip of the body-whorl being stained with violet.

35. FUSUS? ABNORMIS. (Plate L. fig. 10.)

Shell imperforate, oblong, turreted, pale yellowish-brown; whorls 9, very convex, divided by a deep channelled suture, obliquely plicated; plicæ or costæ rounded, swollen, gradually increasing in size from the apex downwards and becoming less prominent, crossed by numerous slender finely-scaled liræ, which are alternately coarser and finer, numbering about 15 on the penultimate and about 40 on the last whorl; aperture small, irregularly pyriform, about one third as long as the entire shell, dirty white within, with the outer lip simple, with 10 fine thread-like liræ, which extend within as far as can be observed, but do not attain quite to the edge of the lip: basal canal short, narrow, oblique, and a little recurved. Length 23 mill., diam.  $11\frac{1}{2}$ .

This species is totally unique in form and sculpture; and it is with considerable doubt that I have placed it among the species of *Fusus*. It also exhibits some affinity with *Coralliophila*, which genus, as generally accepted, contains a group of species which are usually inhabitants of Madrepores, and are characterized by the white or purplish colour, and the scaly nature of the transverse ridges, and the shortish open channel at the base of the aperture, which is

lirate within. The present species is remarkable for the great convexity of the whorls, and the fineness of the spiral scaly liræ. The aperture also is unusually short in proportion to the whole length; and the liræ within are very fine, and produced as far as the eye can trace inwards.

36. *SISTRUM MARGARITICOLA*, Bruguière.

*Hab.* Singapore; Lord Hood's Island; Natal.

37. *LATIRUS DECORATUS*, A. Adams, P. Z. S. 1854, p. 316; Kuster, Con. Cab. Ad. 2, pl. 25. figs. 12, 13 (as *Turbinella*). (Plate L. fig. 11.)

*Hab.* New Zealand (*Adams*).

The Andaman variety of this species has the longitudinal costæ much thicker, and consequently fewer in a whorl, than the New-Zealand form; and the colour is a little different. The general tint is whitish with a blush of rose, the two granulous liræ beneath the suture light brown, interstices between the costæ dark brown, the body-whorl with a rose-coloured band bordered on each side by a white liration around the middle, the tip of the canal blackish, the columella and outer lip pinkish, and the apex of the spire pink. The colour of this species ("alba castaneo varie picta") given by Adams does not at all describe the variety of painting. There are two specimens in the Cumingian collection, both pinkish white with a rosy apex and a pinkish aperture; and one, probably the type, has the dark brown tip to the canal. The shell figured in the Couchylien-Cabinet is larger than the type or the Andaman specimens. The former is 18 mill. long, 17 in diameter, and the largest of the latter 20 in length and 8 in width.

38. *LATIRUS FASTIGIUM* (Reeve). (Plate L. fig. 12.)

*Turbinella fastigium*, Reeve, Conch. Ic. iv. figs. 72 a, b.

*Hab.* Ceylon.

Of this species the British Museum possesses three specimens—one from Ceylon, the type (the habitat of which is unknown), and the third presented by Capt. Wilmer, from the Andaman Islands. Two of them have six longitudinal costæ, whilst the type has only five. The latter is an immature shell; and consequently the figure of it in the 'Conchologia Iconica' does not convey a true idea of the aperture in the adult. When perfect the canal is a little longer and the columella is covered with a callosity, the edge of which is produced, and at the base of the shell forms an umbilical fissure.

Reeve does not mention that one or two of the spiral liræ just beneath the suture are conspicuously scabrous; nor does he point out that 4 or 5 of them around the cauda of the body-whorl are also scabrous and thicker than the rest, which are frequently alternately coarser and finer. The plaits on the columella are somewhat indistinct and about five in number; and the aperture is finely lirate within, the liræ terminating at some distance from the margin of the labrum.

39. *LATIRUS INCARNATUS* (Deshayes), var.

*Turbinella incarnatus*, Desh., Kiener, Coq. Viv. pl. 18. fig. 3; Reeve, Conch. Icon. iv. fig. 55.

*Hab.* Philippines; Australia.

The shell from the Andaman Islands, which I consider a variety of this species, is light brown and darker between the ribs; the apex of the spire is pinkish; and the body-whorl has two spiral whitish or yellowish liræ, one above and the other below the middle of it, the former being visible on the penultimate and antepenultimate whorls. The aperture and columella are pinkish, the outer lip finely lirate within; and the columella has one or two rather indistinct plicæ at the base.

40. *MITRA MÆSTA*, Reeve, Conch. Icon. ii. sp. 323. (Plate L. fig. 13.)

*Hab.* Philippine Islands.

Shell fusiform, turreted, olive-brown, subimate. Whorls 10 or 11, shortly tabulated above, but very slightly convex at the sides, spirally grooved with three narrow subequidistant sulci, the uppermost one at the top of the whorls, dividing off a thickened edge to the tabulation, which is channelled; this thickened belt is of a brighter brown colour than the rest of the shell. Last whorl transversely sulcated throughout; sulci about 11 in number; a few of the superior ones, with the exception of the uppermost, more or less obsolete; those below the middle broader and deeper, leaving raised ridges or liræ between them. Aperture narrow, brownish within, a little less in length than half the entire shell; columella furnished with a thickish callosity, with a raised free edge forming in the umbilical region a slight fissure; plaits 4, the uppermost thickest, the others in turn by degrees finer; basal channel and tip of the whorl dark brown. Length 19 mill., diam.  $6\frac{1}{2}$ .

This species is remarkable on account of the turreted character of the spire. The tabulation of the whorls, however, is narrow and shallowly channelled. The Andaman specimen differs from the type in having the whorls more distinctly turreted; the spiral sulci are not so pronounced; and the colour is somewhat different. In the type (which is a worn shell), the upper part of the whorls is white, whilst in the specimen above described it is light brown.

41. *MITRA MARIÆ*, A. Adams, Proc. Zool. Soc. 1851, p. 140. (Plate L. fig. 14.)

*Hab.* Eastern Seas.

In describing this species Adams writes, "*labro intus sulcato.*" I have carefully examined the type specimens in Cuming's collection and also the Andamese shell, and do not find a trace of sulcation within the labrum of any of them, and therefore conclude that the observation of Mr. Adams was incorrect.

The body-whorl has two broad purplish-brown bands indistinctly separated by a faint light zone occupying the greater part of the whorl. Beneath the suture there is a greyish-white band. The entire surface

is variegated with fine white zigzag lines and small brownish spots, principally on the upper edges of the transverse liræ. The superior margin of the upper purplish-brown band is interrupted by opaque white blotches edged on one side by dark brown. In the Monograph of this genus (*Thesaurus Conchyl.* iv.) Sowerby considers this species a variety of *M. incisa*, Ad. & Reeve. However, I think there are sufficient differences to separate them. The form of the latter is narrower, the whorls proportionally higher, the transverse ridges on the spire flatter, and the spire itself is less acutely conical.

42. MITRA (CANCILLA) ANNULATA, Reeve, *Conch. Icon.* ii. sp. 103.

*M. nitens*, Kiener, *Coq. Viv.* pl. 29. fig. 96.

*Hab.* Zanzibar (Reeve).

The plaits on the columella are not invariably five in number, some specimens being furnished with a sixth. The shells from the Andaman Islands have less of the brown markings than appear in Reeve's figure, and in this respect resemble more the specimen delineated by Kiener.

43. MITRA (CANCILLA) PHILIPPINARUM, A. Adams, *P. Z. S.* 1851, p. 141.

*M. flammea*, Reeve (not of Quoy & Gaimard), *Conch. Icon.* ii. fig. 120.

*Hab.* Philippine Islands.

This species, when in fine condition, has the transverse costæ prettily marked with small, close-set, olive-brownish dots. These are not mentioned by Reeve or Adams, owing to the fact that the specimens in Cuming's collection which they described are somewhat worn or over-cleaned; however, they are traceable when closely searched for.

44. MITRA (CHRYSAME) TABANULA, Lamk., Kiener, *Coq. Viv.* pl. 9. fig. 27; *Voy. Astrolabe*, pl. 45 bis, figs. 10-13; Reeve, *Conch. Icon.* ii. fig. 332.

*Hab.* Philippines (Reeve); Vanikoro (Quoy).

The specimen of this species from the Andamans is rather small, and of a uniform deep brown colour. The three plaits on the columella are whitish, the aperture olivaceous; and the outer lip has three or four conspicuous tubercular teeth at a short distance from the upper extremity.

45. MITRA (CYLINDRA) UNDULOSA, Reeve, *Conch. Icon.* species 193, fig. 192.

*Hab.* Philippines (Cuming).

A very short stunted variety was obtained by Capt. Wilmer. It has eight plaits on the columella, whereof the uppermost is much thicker than the rest.

46. MITRA (CALLITHEA) ACUPECTA, Reeve, *Conch. Icon.* fig. 76.

The Andaman shell agrees precisely in form with the type from Zanzibar; but the longitudinal costæ are less numerous.

47. MITRA (*CALLITHEA*) *OBELISCUS*, Reeve, *Conch. Icon.* ii. fig. 107.

A small specimen, not quite adult, from the Andaman Islands, agrees with those from the Philippines in all respects, but has the second white band below the middle of the body-whorl more conspicuous than usual.

48. MITRA (*COSTELLARIA*) *EXASPERATA*, Chemnitz; Reeve, *Conch. Icon.* fig. 162.

*M. torulosa*, Lamk., Kiener, *Coq. Viv.* pl. 25. fig. 77.

*Hab.* Java; Philippines.

49. MITRA (*COSTELLARIA*) *DESHAYESII*, Reeve, *Conch. Icon.* fig. 170.

*Hab.* New Caledonia (*Mus. Cuming*).

Capt. Wilmer tells me that the orange-scarlet markings on this pretty species fade considerably after death. One of the specimens he collected is 25 millims. long. The mouth is purplish black within, with a single white zone; and the lip is white within at the margin.

50. *RANELLA PUSILLA*, Broderip, *P. Z. S.* 1832, p. 194; Sowerby, *Conchol. Illustr.* fig. 1\*, fig. 1a, var.; Reeve, *Conch. Icon.* ii. figs. 44 a, b (both varieties). (Plate L. fig. 15).

*Triton laciniatum*, Mighels, *fide* Pease, *Amer. Journ. Conch.* iv. p. 107.

Var. = *R. rosea*, Reeve, *l. c.* fig. 46.

Var. = *Bursa concinna*, Dkr. *P. Z. S.* 1862, p. 239.

*Hab.* Lord Hood's Island and Philippine Islands; Red Sea.

*R. rosea*, Reeve, and *concinna*, Dkr., which I consider varieties of this species, are distinguished from the normal form almost solely on account of a difference in colour. If this were tenable, the Andaman shell would constitute a third species; for it certainly varies in this respect either from *R. pusilla*, *concinna*, or *rosea*. The principal colour is reddish brown; the lowermost series of granules on the upper whorls, the fourth and fifth series from the top of the body-whorl, and the second rib from the suture on each varix, on all the whorls, are yellow. The columella is purple, with three or four transverse whitish nodules, and within the outer lip near its edge there are about eight white bead-like granules on a dark-purple ground. The interior of the aperture is purple-brown, with the exterior yellow zone visible.

The normal form of the species described by Broderip is white in every part. In the Museum series of nearly 40 specimens there are various intermediate and connecting gradations between this and the pink form (*rosea*) or the brown variety (*concinna*). In fact, the differences are so subtle, that I feel it impossible to draw a line of distinction any where between these varieties. The difference in specimens apparently adult is very striking. The largest example of

the variety (*rosea*) measures 22 millims. in length, whilst a very small one is only 9 millims. long.

The tuberculation is also subject to considerable variation. The number of the transverse series of granules appears to be very constant, there being invariably three principal rows in the upper whorls, and seven in the body-whorl, but the size and number of the granules differ in various examples; and this difference is not peculiar to each form, but exists in shells belonging to the same variety.

Reeve describes the tubercle-like nodules on the angle of *rosea* as bipartite. This is scarcely correct; for there certainly are two series at this point; and being situated rather closely together, they might be considered single nodules subdivided.

51. TRITON (SIMPULUM) STRANGEI, A. Adams & Angas, P. Z. S. 1864, p. 35. (Plate L. fig. 16.)

*Hab.* Moreton Bay, East Australia.

The whorls in this species are seven in number, and not four as described by the authors of it. The four apical or nuclear volutions are smooth, convex, and horn-colour; the remaining three are somewhat concave beneath the suture, of a pale brown colour; and the varix on the labrum between the spiral ridge is stained with bright red, and the canal with brown.

The transverse costæ are described by Adams and Angas as being trisulcate. This, however, is not the case; for there are only two sulci, making each of the ridges trilirate, the central liration being most prominent. The costæ are prettily undulated, owing to their being prominent at intervals where they cross the longitudinal sub-plications; there are two of them round the middle of the penultimate whorl, and the one preceding it, and five on the last. The aperture is white, and the columella furnished with a tubercle at both extremities; the Andaman specimen, besides these, has a few intermediate ones. The labrum is strongly varicose, and has six coarse lirations within.

52. TORINIA PERSPECTIVIUNCULUS, var. (Plate L. figs. 17-17 b.)

*Hab.* Red Sea, Seychelles Islands, Philippines, Pacific Islands, &c.

The Andaman and Seychelles specimens of this widely distributed and very diversely shaped species are very depressed in form, similar to the variety (*planulata*) figured by Hanley in Sowerby's 'The-saurus Conchyliorum,' vol. iii. pl. 254. fig. 63.

The operculum is very elongate-conical, having a marked resemblance in form to a small *Triphoris*.

53. CYPRÆA GANGRÆNOSA, Solander.

*Hab.* Zanzibar, Mozambique.

54. LITORINA UNULATA, Gray, Philippi's Abbild. ii. pl. 5. figs. 17, 18; Reeve, Conch. Icon. figs. 67 b-d (? fig. 67a).

*Hab.* North Australia, Philippines, and Society Islands.

55. *LITORINA VENTRICOSA*, Philippi, Abbild. iii. pl. 6. fig. 19 ;  
Reeve, Conch. Icon. fig. 93.

*Hab.* Pulo Penang.

*L. nova-zealandiæ*, Reeve, and *L. melanacme*, Smith, have a somewhat similar ventricose form, but differ in colour and the absence of the granulation on the transverse ridges between the sulci.

56. *CERITHIUM (VERTAGUS) KOCHI*, Philippi, Abbild. iii. pl. 1.  
fig. 3 ; Conch. Icon. figs. 26 *a, b*. (Plate L. fig. 18.)

*Hab.* East Africa, Philippines, Japan.

The Andaman specimens are small, but agree very closely in detail of sculpture with more typical ones, yet differ rather in colour. They are pale horn-colour, with the granules, varices, and a band at the top of the whorls whitish. Behind the varices they are blotched with dark brown ; and their entire surface is irregularly dotted and spotted with brown, and the transverse thread-like striæ are also of the same colour ; the liration below the middle of the body-whorl, which is more prominent than the rest, is white, ornamented with brown dots.

57. *CERITHIUM (VERTAGUS) TURRITUM*, Sowerby, Thesaurus,  
ii. pl. 180. fig. 101 ; Reeve, Conch. Icon. xv. fig. 58 ; Smith, Annals  
& Mag. Nat. Hist. 1875, xvi. p. 106. (Plate L. fig. 19.)

*Hab.* Philippines, Japan.

The shells in the present collection are in colour and sculpture exactly like those which I described in the Annals and Mag. Nat. Hist., from Japan, but a trifle smaller.

58. *TRIPHORIS SCULPTUS*, Hinds, Voy. Sulphur, pl. 8. fig. 3.

*Hab.* Straits of Malacca (*Hinds*).

59. *TURRITELLA INFRACONSTRICTA*. (Plate L. fig. 20.)

Shell subulate, subturreted, brownish white, ornamented with countless minute reddish-brown dots. Whorls about 20, somewhat convex at the top and sides, and slopingly narrowed at the base, thus making the width at the suture considerably less than a little distance above it, transversely finely lirated ; liræ varying in thickness, a few being a trifle coarser than the rest, two especially—the upper, situated very near the middle of the whorl, and the lower one at the broadest part of it, being conspicuous and forming indistinct angles ; they are all minutely dotted with brown. Last whorl excavated beneath, finely lirated, and of a uniform brownish white or pale pink tint, with a rather acute ridge circumscribing the base. Aperture irregularly obliquely quadrate, of the same colour as the exterior ; but the flattened base is coated with a thin pale rose-coloured enamel. Columella slightly oblique and a little arcuate. Length 50 millims., diam. 12.

This species, like most others in the genus, is chiefly distinguished by the form of the whorl, the character of the markings, and the spiral liration. The dottings on the ridges are very small, and are



arranged under one another in oblique and more or less flexuous lines. In other words, the whorls are ornamented with fine oblique or flexuous lines, which are interrupted by numerous spiral sulci, thus producing series of dots. Through the prominence, although slight, of the two principal liræ, the whorls between them appear somewhat concave, and the ridge around the base of the last whorl passes just above the labrum and winds up the spire at the sutural line.

60. *AMALTHEA AUSTRALIS*, Lamarck.

*Hab.* Kangaroo Island, Australia, Philippines.

61. *GLADIUS (RIMELLA) CANCELLATUS*, Lamarck ; Kiener, Coq. Viv. (*Rostellaria*), pl. 3. f. 3.

*Hab.* "Chili and Moluccas" (*Kiener*).

62. *XENOPHORA SOLARIOIDES*, Reeve.

*Phorus solaroides*, Reeve, Conch. Icon. i. fig. 8.

*Hab.* Philippine Islands.

072. 1953 63. *TROCHUS (CLANCULUS) MICRODON*, A. Adams, P. Z. S. 1851, p. 162. (Plate L. figs. 21-21*b*.)

*Hab.* — ?

This species, the habitat of which was not hitherto known, is not very fully described by Adams. The colour is subject to considerable variation. The series of granules are usually lightish brown, and the interstices almost black. This simplicity of colour is destroyed by broad, irregular, white patches radiating from the suture; and many of the granules, especially on the base, are white. Two or three of the series of the interstices between them around the umbilicus are white, only a few of the granules being brown. The whorls are six in number and rather convex.

64. *TROCHUS (MONILEA) CALYCVLUS*, Wood, Index Test. Suppl. pl. 6. f. 44 ; Adams, Gen. Rec. Moll. iii. pl. 49. figs. 3-3*b*.

*Trochus (Monilea) masoni*, G. & H. Nevill, Journal Asiat. Soc. Bengal, 1874, vol. xliii. part 2, pl. 1. figs. 1, 1*a*.

*Hab.* Eastern Seas (*A. Adams*, P. Z. S. 1851).

On comparing Andaman specimens of this species with the type presented to the British Museum by the late Dr. Gray, I have not the slightest doubt of their specific identity.

65. *TROCHUS (FORSKÅHLIA) PULCHERRIMUS*, A. Adams, Gen. Rec. Moll. i. p. 432. (Plate L. figs. 22, 22*a*.)

*Gibbula pulcherrima*, A. Ad. P. Z. S. 1854, p. 39.

*Hab.* China Sea.

The colour of this beautiful species varies in some examples, but appears to be constant in its distribution. The oblique arcuate pink or scarlet stripes on the upper part of the body-whorl, which in some specimens are black, generally terminate a little above the middle. At this part the whorl is encircled by two close-set gra-

nulous liræ, with a furrow on each side, whereof the lower is the more conspicuous. Immediately below this the colour of the interrupted scarlet stripes changes to black, and they assume the form of somewhat quadrate spots, but towards the aperture become more flame-like and merge into scarlet.

66. HALIOTIS VARIA, Linné.

*H. varia*, Linn., teste Reeve, Conch. Icon. iii. sp. 4.

*Hab.* Philippines.

67. ATYS CYLINDRICA, Helbling; Sowerby, Thesaurus, ii. pl. 125. f. 114.

Var. = *Bulla solida*, Brug. Ency. Méth. pl. 360. f. 2; Thesaurus, pl. 124. figs. 112, 113.

Var. = *Atys elongata*, A. Ad.; Sowerby, Thesaurus, ii. pl. 125. fig. 121.

*Hab.* Philippines, Ceylon.

68. CARDIUM HYSTRIX, Reeve, Conch. Icon. ii. figs. 40 *a*, *b*.

*Hab.* Philippines (*Cuming*).

The Andaman specimen of this lovely shell belongs to Reeve's var.  $\beta$ , being pure white, with the exception of a pale tint of pink on the posterior side near the ligament.

69. CARDIUM (LÆVICARDIUM) AUSTRALE, Sowerby, Proc. Zool. Soc. 1840, p. 105; Conch. Illust. figs. 12, 12\* (overcoloured); Reeve, Conch. Icon. ii. fig. 97.

*C. pulchrum*, Reeve, Conch. Icon. fig. 98.

*Hab.* Philippines, China, Ceylon.

The differences of form, sculpture, and colouring which Reeve considered sufficient to distinguish his *C. pulchrum* from *C. australe* are, in my opinion, hardly sufficient to constitute a variety. The form in almost every species of *Cardium* is subject to considerable variation, and likewise the colour. Reeve does not mention that the anterior dorsal area in his type is blotched with purple at the extremity, as is the case in *C. australe*. The sculpture of both forms is identical: both have the groove on the posterior side, which, within the valves, forms a raised oblique ridge; but in some specimens it is more conspicuous than in others. The Andaman examples are rather young and bear the remains of their epidermis, which takes the form of very thin, short, irregular yellowish lamellæ arising from the radiating striæ. Their colour is whitish or yellow, marked with subconcentric irregular yellowish brown bands, which are more purple-brown within the valves and towards the umbones. The latter at the tips and the hinge-margin are purple; and within, a line of the same colour extends from the umbo to about the middle of the valves.

70. CORBULA FORTISULCATA. (Plate L. figs. 23–23*b*.)

Shell very inequivalve, inequilateral, somewhat triangular, dirty white, solid, rounded at the posterior extremity and beaked anteriorly: